UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/737,259	12/14/2000	Xiaoqiang Luo	YOR20000737US1 (590.033)	1915

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EXAMINER
SHORTLEDGE, THOMAS E

ART UNIT	PAPER NUMBER
2654	

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO 90C (Rev 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/737,259	LUO ET AL.
	Examiner	Art Unit	
	Thomas E. Shortledge	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 June 2005</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-25</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-25</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-10, and 13-22 and 25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1, 13, and 15 define non-statutory processes because they merely manipulate an abstract idea (decodes at least one type of input) without claimed limitation to a practical application. The disclosed invention has a practical application in the technological arts (a statistical parser); however, the claimed process, a series of steps to be performed on a computer; simply manipulates an arrangement of data without a claimed limitation to the practical application and does not have any post or pre-computer activity.

A review of application 09/737259 shows the disclosed invention thereof to be an apparatus and method for statistical parsing. This is a practical application within the technological arts. However, it does not disclose specific input. No more specific disclosure of the claimed "input" is set forth, i.e. linguistic or speech input. The steps that formed the claimed process are devoid of any limitations to any practical application.

In the instant application the disclosure is directed to any and every input for carrying out the claimed functions, and not solely to specific input.

Regarding claims 2-10, and 14-22 (depending on claims 1 and 13), the rejection is based on the same reason describe for claims 1 and 13, because claims 2-10, and 14-22 have the same or similar problem regarding non-statuary subject matter as claims 1 and 13.

2.   To expedite a complete examination of the instant application the claims rejection under 35 U.S.C. (nonstatutory) above are further rejected as set forth below in anticipation of applicant amending these claims to place within the statutory categories of invention.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1, 13, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Richardson et al. (5,752,052).

As to claims 1, 13 and 25, Richardson et al. teach:

providing a statistical parser, the statistical parser including a statistical model

which decodes at least one type of input (parse the input string collecting statistics on

rules and lexicon entry success rates, Fig. 1, element 101);

adapting the statistical model via employing a mathematical transform

(normalizing the statistics for the rules and lexicon entries, (Fig. 1, element 103), where

it would be necessary for the normalizing step to be carried out by a mathematical

transform).

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 2, 5-12, 14, and 17-24 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Richardson et al. in view of Kita et al. (HMM Continuous Speech

Recognition Using Predictive LR Parsing).

As to claim 2 and 14 Richardson et al. do not teach the mathematical transform

employed by said adapter comprises a Markov Transform.

However Kita et al. do teach updating probabilities using a Hidden Markov Model phone probability calculation process (page 704, right column).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the parsing system of Richardson et al. with the Markov calculations as taught by Kita et al. to further improve recognition accuracy as taught by Kita et al. (page 703, left column).

As to claims 5 and 17, Richardson et al. and Kita et al. do not teach of right-multiplying the row vector by a Markov matrix.

Official notice is taken that both the concept and advantages for updating a Markov model by right multiplying a row vector by a Markov matrix (or left multiplying a column vector by a transpose of the Markov matrix) are well known and expected in the art. It would have been obvious to update the Markov model included in Richardson et al. and Kita et al. to conveniently update the probabilities to improve the recognition accuracy and efficiency as taught by Kita et al. (page 703, left column).

As to claims 6 and 18, Richardson at al. do not teach that the adapter is configured for choosing a Markov matrix such that the log probability of given material is maximized.

However, Kita et al. do teach of finding the highest and best probability (page 704, right column).

Therefore it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the parsing system of Richardson et al. with the highest probability of Kita et al. to improve recognition accuracy as taught by Kita et al. (page 703, left column).

As to claims 7, 9 and 19, 21, Richardson et al. do not explicitly teach unsupervised or supervised adaptation.

However, Kita et al. teach the use of Viterbi algorithm to update the probabilities, it can be run in either supervised or unsupervised modes (page 704, right column).

Therefore it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the parsing system of Richardson et al. with the unsupervised or supervised updating of Kita et al. to improve recognition accuracy as taught by Kita et al. (page 703, left column).

As to claims 8 and 20, Richardson et al. employing decoded parses of test material (compiling statistics indicating the success rate of the parser when it applies each lexicon entry and each rule while parsing a "corpus" or large sample of representative text, col. 4, lines 19-23).

As to claims 10 and 22 Richardson et al. teach adapting the statistical model comprises employing adaptation material (an efficient parsing mode, where the parser only applies applicable rules and lexicon entries, col. 4, lines 30-34).

As to claims 11 and 23 Richardson et al. teach a statistical model which decodes linguistic input (generating syntax trees to represent the organization of plain-text sentences).

As to claims 12 and 24 Richardson et al. do not tech a statistical model which decodes speech input in speech recognition.

However, Kita et al. teach a speech recognition device for input into the parser, (page 705, right column).

Therefore it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the parsing system of Richardson et al. with the unsupervised or supervised updating of Kita et al. to improve recognition accuracy as taught by Kita et al. (page 703, left column).

7.   Claim 3, 4, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richardson et al. in view of Kita et al. as applied to claims 2 and 14 above, and further in view of Miller et al. (A Fully Statistical Approach To Natural Language Interfaces).

As to claim 3 and 15 Richardson et al. and Kita et al. do not teach assigning to the statistical model, prior to said adapting step, a probability mass function.

However, Miller et al. teach the statistical model is assigned, prior to adaptation, a probability mass function (the probability mass for each discourse-dependent meaning is focused on a single parse tree, page 56, right column).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the parsing system of Richardson et al. with the Markov calculations as taught by Kita et al. and with the probability mass functions of Miller et al. to create an end-to-end system that maps input utterances into meaning representation frames as taught by Miller et al. (page 55, col. 1).

As to claims 4 and 16, Richardson et al. do not teach the probability mass function is written as a row vector.

However, Kita et al. do teach a vector probability array (page 704, right column), equivalent to a row vector.

Therefore it would have been obvious to one of ordinary skill of the art at the time of the invention to combine the parsing system of Richardson et al. with the probability function usage of Kita et al. to conveniently arrange the probability data for updating by Kita's Markov transform.

Conclusion

8.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

9.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas E. Shortledge whose telephone number is (571)272-7612. The examiner can normally be reached on M-F 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571)272-7602. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TS
8/29/2005

RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER